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(54) **INJECTION NOZZLE FOR A METALLIC MATERIAL INJECTION-MOLDING MACHINE**

5,858,420 A * 1/1999 Szajak et al. 425/557
6,106,275 A * 8/2000 Huff et al. 425/563

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* cited by examiner

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(57) **ABSTRACT**

In metallic material injection molding machines, the connection between the injection nozzle and the sprue bushing has tended to leak metallic material. To overcome this problem, the nozzle has been modified to have a projecting portion or spigot that extends into a mating portion of the sprue bushing to form a seal between the respective portion walls. The nozzle and sprue bushing can move axially with respect to one another without loss of sealing whereas with the prior designs any separation between confronting annular surfaces on the sprue bushing and the nozzle would result in a loss of sealing and leakage.

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(52) U.S. Cl. **164/312; 164/113; 164/284**

(58) Field of Search **164/900, 312, 164/113; 425/569, 574**

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,623,015 A * 11/1986 Zecman 164/312

9 Claims, 5 Drawing Sheets

